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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/619,691	07/16/2003	David M. Krinsky	5550-2-CON2	7134
62574	7590	10/20/2008	EXAMINER	
Jason H. Vick Sheridan Ross, PC Suite # 1200 1560 Broadway Denver, CO 80202			TRAN, KHANH C	
			ART UNIT	PAPER NUMBER
			2611	
			NOTIFICATION DATE	DELIVERY MODE
			10/20/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/619,691	Applicant(s) KRINSKY ET AL.	
	Examiner KHANH C. TRAN	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 44-83 and 85 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 44-83 and 85 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 7/16/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The Amendment filed on 7/1/2008 has been entered. Claims 44-83 and 85 are still pending in this Office action.

Response to Arguments

2. Applicant's arguments with respect to claim 84 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 44-83 and 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Milbrandt U.S. Patent 6,631,120 B1 in view of Czerwiec U.S. Patent 5,361,293.

Regarding claim 44, in column 10 lines 40-60, see also FIG. 2, Milbrandt discloses modems 60 may collect information defining the operational characteristics of subscriber lines 16 while providing data services to subscribers 12. This process of gathering subscriber line information 28 is referred to as "modem training". Although the

Art Unit: 2611

following description of ***modem training is detailed with reference to ADSL modems that employ discrete multi-tone (DMT) modulation technology***, it should be understood that other types of modems employing other modulation technology may gather information defining the operational characteristics of a subscriber line 16 using suitable techniques. Therefore, one of skill in the art can appreciate ***that the transmit power spectrum density and data rate determination features and functions performed by server 18 are not limited to any particular type of communication protocol or modulation technology.***

In column 11 lines 5-50, see also FIGS. 1 and 2, Milbrandt teaches that during modem training, an ADSL modem 60 employing DMT modulation technology may collect subscriber line information 28 used to determine attenuation information and noise information for each channel of the data frequency spectrum for a particular subscriber line 16. To collect subscriber line information 28 for subscriber line 16 during the downlink transmission of data, for example, modem 60 transmits a data signal at a known transmit power spectrum density, Q_f , for each channel of the data frequency spectrum allocated for downlink transmission.

Milbrandt further teaches that in some situations, modems 60 and 42 may not establish a connection over the entire frequency spectrum of a subscriber line 16. Rather, the modems 60 and 42 may only connect over a sub-range of frequencies. In these instances where a modem 60 fails to operate over the entire frequency spectrum supported by a subscriber line 16, central office 14 may enter a modem 60 into a diagnostic mode. In the ***diagnostic mode***, a modem 60 communicates to modem 42 a

Art Unit: 2611

signal pulse at a known transmit power spectrum density, Q_f , for one or more sub-frequencies within the frequency spectrum over which the modems 60 and 42 may still connect. In light of the foregoing disclosure, the transmit power spectrum density, Q_f , corresponds to the claimed diagnostic message

Milbrandt does not explicitly disclose each bit in the diagnostic message is mapped to at least one DMT symbol as claimed in the application claim.

As recited above, ***modem training is detailed with reference to ADSL modems that employ discrete multi-tone (DMT) modulation technology.*** In view of that, because modem employs DMT modulation technology, one of ordinary skill in the art at the time the invention was made would have recognized that the transmit power spectrum density, Q_f , represent bits of diagnostic message, the bits being mapped to DMT symbol containing sub-range of frequencies.

Milbrandt does not disclose, in the diagnostic mode, the transmit power spectrum density, Q_f , includes frequency domain received idle channel noise information as claimed in the application claim.

Czerwiec invention relates to telecommunications and, more particularly, to a system for subscriber loop testing; see column 1 lines 15-20. Czerwiec teaches the transmission tests include two types of return loss measurements are performed: (1) a measure of round trip channel loss performed with the RT channel unit terminated by a reflective termination and a (2) a measure of echo-return loss with the RT channel unit terminated by an absorptive termination. A ***round trip*** ~~idle channel noise~~ ***test*** is also

Art Unit: 2611

made by turning off a swept oscillator in the PGTC channel tester unit while the RT channel unit has an AC reflective termination.

As further disclosed by Milbrandt in col. 12 lines 45-60, the noise information for a particular subscriber line 16 may be determined by measuring noise characteristics of a subscriber line 16 during operation or by calculating the noise information using subscriber line information 28 for subscriber line 16. For example, a modem 42 of a subscriber 12 may operate as a spectrum analyzer during operation to sample a time domain signal communicated by central office 14 using subscriber line 16. Modem 42, operating as a spectrum analyzer, measures the noise variance of the time domain signal over a statistically significant period of time and ***converts the measured noise variance from the time domain to the frequency domain by performing, for example, a Fast Fourier Transform.***

In light of that, because the noise information is part of the modem training and characterization, therefore, one of ordinary skill in the art at the time the invention was made would have been motivated to modify Milbrandt teachings to include the idle channel noise information in the diagnostic mode for testing purposes as taught in Czerwiec invention.

Regarding claim 45, claim is rejected on the same ground as for claim 44 because of similar scope. Further in col. 11 lines 30-50, Milbrandt further teaches in the diagnostic mode, a modem 60 communicates to modem 42 a signal pulse at a known transmit power spectrum density, Q_f , for one or more sub-frequencies within the

Art Unit: 2611

frequency spectrum over which the modems 60 and 42 may still connect, such as over a sub-frequency in the voice frequency spectrum. Modem 42 at subscriber premises 12 receives the data signal that is communicated by modem 60 and determines subscriber line information 28, such as attenuation information, noise information, received signal power spectrum density, S_f , or any other information describing the physical or operating characteristics of subscriber line 16 at the one or more sub-frequencies over which the connection between modem 60 and 42 is established.

Regarding claim 46, claim is rejected on the same ground as for claim 44 because of similar scope.

Regarding claim 47, claim is rejected on the same ground as for claim 44 because of similar scope.

Regarding claim 48, claim is rejected on the same ground as for claim 44 because of similar scope. Furthermore, a communication server 58 comprises any suitable combination of hardware and software that resides at central office 14, at a remote terminal, or any other suitable access point in system 10 that allows coupling to local loops formed by subscriber lines 16; see column 6 lines 30-40, also FIG. 1.

Regarding claim 49, claim is rejected on the same ground as for claim 44 because of similar scope. Furthermore, as recited in claim 44 rejection, in the diagnostic

Art Unit: 2611

mode, a modem 60 communicates to modem 42 a signal pulse at a known transmit power spectrum density, Q_i , for one or more sub-frequencies within the frequency spectrum over which the modems 60 and 42 may still connect. ADSL modem 60 employs DMT modulation technology. In view of that, DMT symbols are mapped to the signal pulse, representing bits of diagnostic message.

Regarding claim 50, claim is rejected on the same ground as for claim 49 because of similar scope.

Regarding claim 51, claim is rejected on the same ground as for claim 49 because of similar scope.

Regarding claim 52, claim is rejected on the same ground as for claim 49 because of similar scope.

Regarding claim 53, claim is rejected on the same ground as for claim 49 because of similar scope.

Regarding claims 54-63, in column 11 lines 20-35, Milbrandt teaches in some situations, modems 60 and 42 may not establish a connection over the entire frequency spectrum of a subscriber line 16. In these instances where a modem 60 fails to operate over the entire frequency spectrum supported by a subscriber line 16, central office 14 may enter a modem 60 into a diagnostic mode. Hence, the foregoing disclosure

Art Unit: 2611

addresses the claimed limitations “the initiate diagnostic mode message based on a bit rate failure”.

Regarding claims 64-73, in column 11 lines 20-35, Milbrandt further teaches in the diagnostic mode, a modem 60 communicates to modem 42 a signal pulse at a known transmit power spectrum density, Q_{f_s} for one or more sub-frequencies within the frequency spectrum over which the modems 60 and 42 may still connect.

Regarding claims 74-81, see also FIG2. 1-2, modems 60 and 42 are CO modem and subscriber modem; see also column 8 lines 55-67.

Regarding claim 82, claim is rejected on the same ground as for claim 44 because of similar scope.

Regarding claim 83, claim is rejected on the same ground as for claim 44 because of similar scope.

Regarding claim 85, claim is rejected on the same ground as for claim 44 because of similar scope.

Conclusion

Art Unit: 2611

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHANH C. TRAN whose telephone number is (571)272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KCT

***/KHANH C. TRAN/
Primary Examiner, Art Unit 2611***